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1979 NAVY/ASEE SUMMER FACULTY PROGRAM.(U)
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(12) LEVEL II

(6) 1979 NAVY/ASEE

Summer Faculty Program.

(9) FINAL REPORT. 1. Sep 78-30 Sep 79,

(15) Navy Contract N00014-78-C-0882

To: F.X. Bradley, Jr.
ASEE Contract Manager

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AMERICAN SOCIETY FOR ENGINEERING EDUCATION

1979 Navy/ASEE Summer Faculty Research Program

Contract N00014-78-C-0882

Contract Period: September 1, 1978 - September 30, 1979

FINAL REPORT

Submitted by: F. X. Bradley, Jr.
Director, Projects and Federal Relations
Contract Project Director

Date Submitted: November 15, 1979

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1. Introduction

This report is submitted in accordance with the provisions of Section II Deliveries or Performance of Contract N00014-78-C-0882, dated September 29, 1978. As required by the Contract Data Requirements List for minimum distribution of reports which are not technical reports, this report is being distributed as follows:

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2. Contract Performance Requirements

Section F - Description/Specifications of the subject contract described the work and services to be formed as follows:

"The Contractor shall conduct a pilot summer faculty program at Navy laboratories to assess the effectiveness of providing university faculty members with opportunities at these laboratories during the summer of 1979. The objectives of the task are as follows:

- to engage university faculty members in the research programs of the various naval laboratories;
- to develop the basis for continuing research of interest to the Navy at the faculty member's institution;
- to establish continuing relations among faculty members and their pro-

- . fessional peers in the Navy; and
- . to enhance the research interests and capabilities of science and engineering faculty members.

Some 15 or 16 science and engineering faculty members throughout the country will be selected for specific summer programs at the various laboratories in the Washington, DC area. Participating laboratories would include the following: Naval Research Laboratory, NSRDC, NAVSEC, Naval Electronics Systems Engineering Center, Naval Oceanographic Office, Naval Weapons Laboratory, and the Naval Surface Weapons Center. After selection, each participant will be encouraged to exchange views in anticipation of the summer program. Also the ASEE manager in cooperation with Navy personnel will organize a series of from five to ten lectures or seminars designed to further the professional development of the faculty participants and to familiarize them with the nature and scope of the Navy's mission oriented research.'

As specified, 16 science and engineering faculty members were selected from among 256 applicants to conduct research for 10 weeks during the summer of 1979 at: .

Naval Research Laboratory
 Naval Medical Research Institute
 Naval Surface Weapons Center (White Oak)
 Naval Ship Research and Development Center (Carderock and Annapolis)

This research was accomplished in association with designated colleagues at each of the Naval R & D activities.

Each participant except one made a pre-program visit to his assigned R & D laboratory. One participant did not make a pre-program visit because of the nature of his planned research and prior contacts with the host laboratory.

By agreement between the ASEE manager and his Navy co-directors, the series of lectures originally planned were not formalized. The difficulty of gathering participants in one place from their various research locations made this impractical. It was left to each Navy R & D activity to arrange whatever formal activities it preferred for the participants. There were no provisions in the contract budget for these lectures.

That the objectives of the program were achieved is born out by the response of participants to the post-program questionnaire. A copy of the questionnaire completed to aggregate the responses of participants is attached as Appendix A.

3. Narrative of Administrative Actions

- a. A proposal for a contract effective September 1, 1978 was submitted to ONR on April 25, 1978.
- b. The designated scientific officer, Dr. Nicholas Perrone, Director, Structural Mechanics, Material Sciences Division, subsequently requested a revised budget which was submitted for the contract amount of \$99,750.

- c. Contract N00014-78-C-0882 effective September 1, 1978 was signed by ASEE and the Navy on September 29, 1978.
- d. During September and October, F. X. Bradley, Jr., ASEE contract manager, gathered information from participating Naval R & D activities for the national announcement and program poster. (Copies are attached as Appendix B & C).
- e. During late November and early December, the national announcement and poster was mailed as reported in Bradley's December 20, 1978 Interim Program Progress Report (Appendix D) and Memorandum to Navy Center Co-Directors (Appendix E).
- f. By the February 1, 1979 deadline, 256 useable applications had been received.
- g. During February, Navy center co-directors, the ONR scientific officer and ASEE manager met once followed by telephone discussions to select participants. By mutual agreement, the 16 places were allocated, 6 to NRL, 4 to NSRDC, and 3 each to NSWC and NMRI. The program co-directors at those activities selected in priority order about twice as many potential participants as they were allocated places.
- h. Beginning March 1, the ASEE manager began notifying selected applicants. In every case, the places were filled from the priority list of accepted candidates. A Summary of Characteristics of Participants (and applicants) is attached as Appendix F.
- i. Selected applicants who agreed over the telephone to participate were sent an official appointment letter and were asked to return a written acceptance (Appendix G).
- j. Participants made pre-program visits during April and May. The first participant arrived in mid-May and the last after July 4.
- k. Upon completion, participants were given a certificate of participation (Appendix H). Also NSRDC conducted a final reporting session attended by the participants, their laboratory colleagues, the Navy co-director and ASEE manager.
- l. The Scientific Officer compiled a report which included the technical reports of all the participants for distribution within the Navy. His report included assessments of this first summer faculty program by the Navy co-directors involved.
- m. The contract term ended September 30, 1979.
- n. In October a proposal for a 1980 summer program was submitted to ONR.

4. Financial Management

- a. Participants were reimbursed for travel and living expenses associated

with a pre-program visit and with the program itself. Participants coming from any distance used air for the pre-program travel and personal auto for getting back and forth to the program. All considered having an automobile available during the summer a necessity. \$6,840 or \$440 per participant was budgeted and \$8,839.20 or \$552.45 per participant spent. In budgeting, no allowance was made for the expense of car rentals during pre-program visits. Cars were needed to seek housing.

b. Stipends were paid in four installments:

\$1,500 at the beginning
 \$1,500 after 4 weeks
 800 after 8 weeks
 200 upon submission of final report

Participants apparently found this arrangement agreeable. Total stipends amounted to \$64,000 or \$4,000 per participant. Under C.1 of Appendix A, 6 participants considered the stipend inadequate, while 8 thought it was sufficient.

c. Five vouchers were submitted to the Navy for reimbursement.

No. 1	March 5, 1979	\$11,439.46
No. 2	June 4, 1979	30,816.68
No. 3	July 11, 1979	19,199.92
No. 4	August 17, 1979	27,030.99
No. 5	November 15, 1979	11,209.79
(Final)		

Total \$99,696.79 *

Prompt payment by the Navy saved ASEE from a cash flow problem. Should future programs involve substantially more participants, some provision for cash advances to ASEE will have to be made. The outlays over three months could amount to over 25% of the Society's total annual budget.

5. Conclusion

Both the participants and the involved officials of the Navy activities considered the 1979 prototype program a success and the latter recommended an expanded program for 1980.

The ASEE Summer Faculty Programs Committee received a verbal report from the ASEE manager at its meeting on September 19-20, 1979. The informal consensus was that ASEE should continue to cooperate with the Navy in administering an expanded program in 1980.

(A proposal for Phase I of a 1980 program was submitted to ONR on October 15, 1979. Phase I covers the creation and distribution of a national announcement, attendant publicity, receipt and evaluation of applications from October 1, 1979 through February 29, 1980. Phase II would cover selection and notification of participants, administration of their participation during the summer of 1980 and final reports and evaluation).

* Final financial report is Appendix I

APPENDIX A

AMERICAN SOCIETY FOR ENGINEERING EDUCATION

NAVY/ASSET Summer Faculty Research Program

Evaluation Questionnaire

(Faculty participants are asked to respond to the following questions)

_____ (Summary of responses from 14 of 16 participants)

A. PROGRAM OBJECTIVES (Please circle your choice)

1. Do you feel that you were engaged effectively in a research program of importance to the Navy?

yes 14 no --

2. Did your experience establish a basis for your continuing research contribution to the Navy at your institution under either Navy or other sponsorship?

yes 13 no -- Maybe 1

3. Do you anticipate maintaining relations with the professional peers with whom you came in contact during this summer program?

yes 13 no -- Maybe 1

4. Can you say that your research interests and capabilities have been enhanced by this experience?

yes 14 no --

B. PERSONAL PROFESSIONAL DEVELOPMENT

1. Would you recommend this program to your faculty colleagues as a valuable means of advancing their personal professional development?

yes 14 no --

2. Do you expect that this experience will affect your teaching in ways that will be valuable to your students?

yes 13 no -- Maybe 1

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REPRODUCED IN ANY MANNER

3. Do you have reason to believe that there is your institution's role in decisions on tenure and promotion will give you credit for selection and participation in a highly competitive national program?

Yes 6 No 5 (see notes)

(If the answer is "no", please indicate under comments, below, with whom you should communicate to urge that your selection and participation be given proper recognition).

C. ADMINISTRATION (Please check appropriate responses)

1. How did you learn about the program?

10 Received announcement in mail.

Read about it in a professional publication.

4 Heard about it from a colleague.

Other (Explain) Heard about it: a) from Navy staff (2); from ASFE campus faculty representative (1); from campus office of sponsored programs (1)

2. Considering the personal and professional costs and to participation, do you consider the stipend adequate?

Yes 8 No 6

(If not, what do you think it should be? \$ 500 (4) per week for 10 weeks.
600 (1) \$400-\$1,000 based on rank (1)

3. Would you consider worthwhile a briefing by ONR in a meeting of all participants about the nature and scope of Naval R&D?

Yes 11 No 3

4. Would you be willing to return next summer to continue research under substantially the same conditions?

Yes 11 No 1 (see notes)

(This question is asked in anticipation of the possibility that the Navy may decide to invite some or all of this summer's participants to return for a second summer).

5. Did your assignment require a security clearance?

Yes 3 Yes & No 10
1 No

(If "yes", did this requirement pose any obstacles to achieving your research goals for the summer?

Yes -- No

(If "yes", please comment in space provided).

THIS PAGE CONTAINS NO INFORMATION OF A NATURE THAT IS UNLAWFULLY OBTAINABLE.
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SIGNIFICANTLY OF PAGES WHICH DO NOT
REPRODUCE EXACTLY.

Notes to Summary of Questionnaires (1979 NAVY/ASEE Summer Faculty Program)

- B.3. One participant did not respond.
One said it did not apply to him since he was already a full professor with tenure.
One answered "yes" but suggested a communication from ASEE would be helpful anyway.
- C.4. One cited low stipend, high cost of housing and lack of communication within Navy center as reasons why he would not want to return.
Another thought he could serve Navy better by doing the research at his home institution.

6. Answers to the above questions and any comments you may wish to make below will be used by the ASFE program manager to improve future programs. Answers and comments will not be attributed to respondents by name but will be extracted from the questionnaires. Your participation in the Navy summer program and in completing this questionnaire is greatly appreciated.

COMMENTS:

1. "I found this to be an excellent program and well worth the experience."

2. "Each participant should have a research colleague identified prior to the pre-program visit. While there is great potential for future interaction by me with the Navy, matters are now open while my Navy colleagues digest my report; also I do not know how to pursue this aspect."

"While the stipend is adequate, the travel regulations are restrictive; it is as though we fly to a conference rather than the actual 10 week relocation (I had to drive 6,000 miles + motel and meals in order to have a car during the summer). Systems analysis topics may be management or mathematically oriented; care should be taken to see that such match the orientation of the participant."

3. "The program has been a tremendous success for me personally. I attribute this to the excellent facilities of DTNSRDC and to the superb personnel with whom I worked, both at DTNSRDC and those in administrative positions." I believe this type program is an excellent way for new faculty members at the universities to establish contacts in the U.S. Navy labs. Additionally, it provides invaluable professional experience for those involved."

FXB:bw

7/29/79

(NAVY ASEE SFP Questionnaire) Continued

4. Re B.2.: "May affect graduate level students directly, undergraduate students indirectly.

Re B.3.: "I believe my department head thinks anyone who applies is accepted."

Re C.2: "Since I would earn greater than \$6,000 teaching in the summer, and because of the increased housing expenses, the program is a financial burden. Since one hopefully makes contacts for future work, I suppose one can rationalize the low pay. However, it still is a hardship."

Re C.4.: "In order to be attractive the second summer stipend would have to be higher. If so, the program might be quite successful."

"All in all I think this is an excellent program. I would definitely encourage others to participate. NMRI has been quite helpful and supportive. I view this summer as a very positive experience."

5. "It was a very worthwhile program, both parties were mutually benefited. We admired each other. Before participating in this program I hardly knew anything about the Naval Research and its professional peers. The Navy has a tremendous research activity going on. The academic people through the program will contribute their knowledge and experience to its activities and the Naval activities would broaden our interests and enrich our practical understanding and approaches to the problems which we never thought of. This program is highly recommended for continuation."

"Since we were not the Navy's employees, we were not covered by Navy insurance programs. There should be an arrangement of insurance in case we were sick or hospitalized or we were involved in an accident in the laboratory. Fortunately this has not happened. In short, it was a rewarding and profitable 10 weeks. Thanks for the arrangement."

6. "I viewed the Navy/ASEE Summer Faculty Research Program as a unique opportunity to interact with experts in a new field, acquaint myself with modern, sophisticated and sometimes unique instrumentation and to lay the groundwork for future collaborative efforts. My personal goals have been met and I have nothing but high praise for the program. The introductory visit to the labs is essential to maximize the chances for productivity since a large fraction of the 10 weeks can be spent in defining the problem, acquiring the necessary apparatus and chemicals, etc. I was fortunate to enter a program with previously developed technology to study a fairly specific but important problem. There is no doubt that my association with NRL personnel has been personally and professionally rewarding and I would recommend that this program be continued and even expanded. As with all pleasant experiences, its duration seemed too short."

7. "This program is as well conceived and conducted as it can ever be done. No extra briefing or meeting is really necessary. It is best to leave all technical details to the individual Naval staff member who is assigned to look after the guest worker. Due to very limited length of the program, any secondary activity will reduce the productivity of the worker."

8. "I believe that this program is a good means to develop research interests and professional contacts. Dr. Forman, my associate at NMRI, and I have developed an interest in continuing collaborative research after this program terminates. I do not believe the fellowship will enhance my tenure decision per se but since it definitely has enhanced my research capability, I believe it will have a positive effect on my tenure decision. My only criticism is that greater emphasis should be placed on providing information for the possibility of continuing research under Navy sponsorship. It is valuable for both the Navy and the fellow that the research efforts developed here be continued beyond the end of the program."

9. "Question #3 - The administrators and faculty on our Rank & Tenure Committee are almost exclusively in the humanities area and their background is such that they have difficulty adequately assessing this program. A letter or commentary from the ASEE would be helpful in this case."

I would consider returning to the program next summer. However the much higher cost of living in the Washington area -- particularly, cost of housing, would indicate a higher stipend is a reasonable suggestion. In addition the aid in obtaining information about housing was not too satisfactory. Improvement in handling the housing problem is needed. In addition there appeared (to be) a considerable lack of communication between the faculty participant and the liaison officer at White Oak. For example, I and my immediate Research Colleague, were not aware that I had security clearance until the very last week of my term. There were a number of seminars, meeting, etc. that would have been of great value to me; but they required security clearance; and since I was not made aware of the fact that I had such clearance I felt that I missed some significant aspects of the program.

I must say my immediate Research Colleague, Dr. Ernst and the Branch Chief, Dr. Mueller were very helpful and made my stay at NSWC quite productive and interesting. In sum, I believe that I made some significant contribution to the Navy and in turn the program was of great help to me."

10. Re B.3 "It would probably be helpful to me if ASEE would write to my Dean and to my Department Chairman about my selection and participation in this program. Also, I'd appreciate that a lot."

Re C.3 "I did get a reasonable amount of work done during this summer and returning would be nice. However, I'm mainly an experimental scientist and I think that the Navy and I would both best be served if I stayed in my laboratory at Michigan State next summer and did experiments related to the problems I've learned about and been concerned with."

ANNOUNCEMENT OF AWARDS: March 1, 1979
APPLICATION DEADLINE: February 1, 1979

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U.S. Navy-ASEE Summer Faculty Program
American Society for Engineering Education
Suite 400, One Dupont Circle
Washington, D.C. 20036

**NAVY
and
ASEE**

1979 SUMMER FACULTY RESEARCH PROGRAM

Introduction: The Office of Naval Research will sponsor a 1979 Navy-ASEE Summer Faculty Research Program at six research and development installations administered by four Navy R&D organizations in the Washington, DC area: the Naval Research Laboratory (NRL), the David W. Taylor Naval Ship Research and Development Center at Carderock and Annapolis, the Naval Surface Weapons Center at Dahlgren and White Oaks, and the Naval Medical Research Institute.

Objectives:

- To engage university faculty members in the research programs of the various naval laboratories.
- To develop the basis for continuing research of interest to the Navy at the faculty members' institution.
- To establish continuing relations among faculty members and their professional peers in the Navy.
- To enhance the research interests and capabilities of science and engineering faculty members.

Appointments: Although it is anticipated that the research will be unclassified, in order to assure access to areas in which classified research is being conducted, participants must be U.S. citizens either holding or eligible for a Department of Defense Security Clearance of **SECRET**. Two years' experience in teaching or research are required. Sixteen appointments will be made to teaching and/or research faculty of colleges and universities.

Terms: Stipends are \$400 per week for ten weeks. A travel allowance will be paid the appointee for his personal travel for a pre-program visit to the research site and for the summer program.

Duration: Ten weeks from June 11-August 17, 1979. The duration is fixed but the dates may be changed to accommodate appointees.

David W. Taylor Naval Ship Research and Development Center (NSRDC)

The David W. Taylor Naval Ship Research and Development Center (NSRDC) is the principal Navy research, development, test and evaluation center for naval vehicles and logistics. It also provides RDT&E support to the U.S. Maritime Administration and the maritime industry. NSRDC was established in 1967 with the merger of the David W. Taylor Model Basin at Carderock, Maryland, and the U.S. Navy Marine Engineering Laboratory at Annapolis, Maryland. The center currently has 2,605 employees of whom 1,193 are scientists and engineers. Facilities located at Carderock and Annapolis include deep water model basins, water tunnels, rotating arm basin, anechoic wind tunnel, deep ocean pressure tanks, CDC 6700, 6600 and 6400 computers, hydrofoil test units, materials laboratories, sound and vibration test units, subsonic and transonic wind tunnels and many others.

NSRDC Current Research Interests

Electromagnetic and Acoustic Ship Silencing: Acoustic and magnetic silencing of submarines and surface ships, reduction of sonar self-noise and target strength, sound and vibration measurement, acoustical characteristics of structural materials, hydrodynamic design for noise suppression, acoustical data analysis, wetted surface treatment for noise control, and acoustic fields of submarine and surface vehicles.

Hydrodynamics: Hydrodynamic design and testing of surface ship hulls, hydrofoils, air cushion vehicles, ocean platforms, towed sonar and sonar arrays, towed antenna systems, submarines and submersibles, torpedoes and advanced marine vehicles.

Airborne Aerodynamics: Aircraft, helicopters and airborne systems, aerodynamics of weapons launch, remotely piloted vehicles (RPV), vertical/short takeoff and landing (V/STOL), circulation control rotor, X-wing, wing in

ground effects, and missile/aircraft interaction.

Seaworthiness and Vulnerability: Ship stability, control and performance, ship vulnerability, survivability and protection, weapons effects, damage control, battle maneuverability, combat readiness of naval vehicles and their weapons sub systems, and effects of sea, wind and weather on naval vehicle performance.

Structures and Materials: Structures, materials and fabrication techniques for submarine and surface vehicles, weapons effects, corrosion, underwater fouling and surface treatments, vibration and fatigue, anechoic coatings, and antiship missile structural protection.

Fire Fighting Systems: Warning, containment and control, materials, systems and personnel compatible fire extinguishing agents, and fire fighting logistics.

Computer Aided Analysis, Design and Manufacturing: Computer aided design and construction for surface ships and submarines, advanced ship analysis, dynamic control system simulator acoustic data analysis and reduction, advanced computer facility for vehicle dynamics design and R&D computational support.

Ship Propulsion Systems: Propulsion, power and auxiliary machinery systems for surface ships, fuels and lubricants, submarine auxiliary machinery, energy conservation and pollution abatement, alternate energy sources (other than nuclear) and controllable pitch thrust reversible propellers.

Human Performance in Navy Systems: Human performance in the control and operation of ships, submarines and other vehicles, ship-board manning as related to system design and automation, habitability and vehicle riding characteristics, and crew equipment and life support.

Naval Surface Weapons Center (NSWC)

The Naval Surface Weapons Center (NSWC) of the Naval Material Command was formed in 1974 by the merger of the Naval Ordnance Laboratory and the Naval Weapons Laboratory, each with a distinguished history of R&D related to shore and ship based weapons. The Dahlgren, Virginia, facility of NSWC was formerly the Naval Weapons Laboratory first established at that site in 1918 as the Naval Proving Ground. The White Oak, Maryland, facility of NSWC traces its history to the establishment in 1919 of a mine unit at the Washington Navy Yard, later to evolve into the Naval Ordnance Laboratory. Dahlgren, Virginia, is located about 50 miles south of Washington, DC, while White Oak is a near suburb of Washington. Of the 5,200 employees of NSWC, 2,200 are scientists and engineers. They carry out their activities in a wide variety of advanced R&D facilities including the Navy's largest computer complex; chemistry, plastics and metallurgy laboratories; wind tunnels to mach 18; hydroballistic tank; hydroacoustic chambers; laboratories for testing explosives; a chemical/biological defense laboratory complex and many others.

NSWC Current Research Interests

Acoustic Science: Acoustic countermeasures and decoys, surface ship acoustic systems integration and surface ship torpedo counter measures and counter weapons systems.

Electronic Reconnaissance and Surveillance: Electromagnetic, electro-optical and infrared search, reconnaissance and surveillance applications, airborne passive RF surveillance, and surface ship advanced systems integration.

Communications: Surface ship advanced systems, miniaturization, laser signal generation, fiber optics, digital processing and computer integration into real time command and control.

Fire Control Systems: Fire control software for expanded targeting capability, on-board

footprinting techniques, electro-optical fire control subsystems, laser radar target illumination and tracking, anti-air, anti-surface and ASW systems for surface ships.

Electronic and Electromagnetic Warfare: RF simulator, advance receiver development, electronic countermeasures, decoys, intelligence collection analysis, special purpose jammers, cover and deception, anti-radiation countermeasures, and magnetic characteristics of ships, submarines and satellites.

Guns, Ammunition, Missiles and Mines: Gun/mount systems, ammunition, chemistry of explosives and propellants, guided missiles and projectiles, fuse technology, fuel-air explosive type weapons, sea mines, and sea mine countermeasures.

Combat Systems Integration: Surface ships and anti-air, anti-surface, and anti-submarine combat systems and countermeasures including remotely piloted vehicles, directed energy applications, small and large bore ordnance, missiles, torpedoes and advanced offensive weapons systems.

Navigation: Surface ship advanced systems including integration of shipboard components of global satellite positioning system.

Nuclear Weapons: Nuclear ordnance—safing, arming and fusing, nuclear weapons effects, logistics and security.

Aerodynamic and Hydrodynamic Investigation and Test: Aerodynamic research, hypersonics to mach 18, hydroballistic high speed entry tests, external ballistics, reentry dynamics, air laying trajectory and water entry, glide bombs, flight profiles and torpedo hydrodynamics.

Electromagnetic Radiation Effects: Electronic warfare/tactical intelligence support equipments and systems, intelligence collection and analysis, cover and deception, electronic countermeasures, target simulators, and special purpose jammer systems.

Naval Medicine

The Naval Medical Command is headquartered in the National Naval Medical Center, Bethesda, Maryland. Its mission is to conduct applied research and maintain the health of Navy personnel. It has facilities for research in scientific disciplines and investigation. A list of unique items includes a climate chamber, a climate fluorescence activities for sterile procedures and organs.

NMRI Current

Behavioral Science: physiology, low level behavior, operational hyperbaric behavior toxicology.

Biochemistry: Metabolism and blockage and physio-chemical

Applied Physiology: generating nerve impulses.

SUPPLEMENT

On a separate sheet provide:

1. Colleges attended,
2. Chronology of professional
3. List of publications
4. Research experience
5. Courses taught, in
6. Any other information

Send completed application to:

NAVY-ASEE
Suite 400, On
Washington, D.C.

Naval Medical Research Institute (NMRI)

The Naval Medical Research Institute located in the National Naval Medical Center, in Bethesda, Maryland, is a major facility of the Naval Medical Research and Development Command. Its mission is to conduct basic and applied research and development related to maintaining the health, safety and efficiency of Navy personnel. Established in 1942, it now has facilities for research in a wide variety of scientific disciplines pertinent to medical investigation. A list of equipment includes several unique items, such as a high pressure chamber, a climate-controlled compartment, a fluorescence activated cell sorter, and facilities for sterile procurement of human tissues and organs.

NMRI Current Research Interests

Behavioral Sciences: Hyperbaric psychophysiology, low level microwave effects on behavior, operant behavioral pharmacology, hyperbaric behavioral analysis, and behavioral toxicology.

Biochemistry: Mechanisms of tissue excitation and blockade, analytical biochemistry, and physio-chemical studies.

Applied Physiology: Electrophysiology of regenerating nerve and regeneration of injured nerves.

Hyperbaric Medicine and Physiology: High pressure studies, microcirculatory derangement in the central nervous system under various conditions, and hyperbaric cardiovascular physiology.

Immunology: Biological properties of antigen-antibody complexes, immuno-regulation, clinical immunology, subpopulations of lymphoid cells, cell surface antigens and their role in the immune response, cell-to-cell interactions, human histocompatibility typing, serological identification of human histocompatibility antigens and cryobiology-immunology.

Parasitology: Malaria vaccine, immunoglobulin E and parasite infections, immunology of schistosomiasis, and host and parasite factors in acquired resistance to schistosomiasis.

Experimental Medicine: Function of normal and abnormal hemoglobins, cellular and molecular mechanisms of endotoxin toxicity, renal and hyperbaric pharmacology, and biomembrance structure and function.

Microbiology: Physiology and immunology of rickettsiae, and virulence factors in marine microorganisms pathogenic for man.

Dental Sciences: Mechanism of bone repair in the oral-maxillofacial area, and biologic responses of oral tissues to restorative materials and treatment procedures.

SUPPLEMENTARY INFORMATION

On a separate sheet please give the following supplementary information:

1. Colleges attended, with dates of attendance and degrees received, area, and titles of theses and dissertations.
2. Chronology of professional employment and significant academic and professional activities.
3. List of publications.
4. Research experience.
5. Courses taught, including textbooks or reference books used.
6. Any other information you feel may be helpful.

Send completed application to:

NAVY-ASEE SUMMER FACULTY RESEARCH PROGRAM DIRECTOR
Suite 400, One Dupont Circle
Washington, DC 20036

(202) 293-7080

Application Deadline: February 1, 1979 (only U.S. citizens are eligible)

February 1, 1979
RDS: March 1, 1979

Name of Applicant _____
(Last) (First) (Middle)

Present Position _____
(Title) (Institution and Department)

Business Address _____ Phone AC () _____

Home Address _____ Phone AC () _____

Date of Birth _____ Citizenship _____

Highest Academic Degree, Field, and Year _____

If you do not hold a doctorate, are you working toward that degree? _____

Date expected _____ Institution and Department _____

Special Field of Knowledge _____

Field(s) of Present Teaching Activity _____

Field of Present Research and/or Design Activity (If Supported, Give Sponsor) _____

Please review information on inside pages and list in order of preference (and/or your qualifications) the organization and field of work in which you would like to be placed if awarded an associateship.

(1) Organization _____ Field of Work _____

(2) Organization _____ Field of Work _____

HAVE YOU PARTICIPATED IN ASEE-SPONSORED SUMMER FACULTY PROGRAM(S) PRIOR TO THIS APPLICATION?

☐ Yes ☐ No

IF SO, WHERE _____ WHEN _____
(If more than one, list each one)

LETTERS OF RECOMMENDATION

Please request your Department Head and/or Dean to send a letter of recommendation directly to the program director at the address below. This letter should indicate to what extent your institution would benefit from your participation in this program. Also, give the names and addresses of two other people to whom we may write:

1. Dean or Department Head

Address _____ Phone AC () _____

2. Name of Reference

Address _____ Phone AC () _____

3. Name of Reference

Address _____ Phone AC () _____

(SEE BACK FOR SUPPLEMENTARY INFORMATION)

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**NAVY
and
ASEE**

Introduction: The Office of Naval Research (ONR) is a part of the Navy Department. It is the largest and oldest of the six research and development agencies in the Navy. It is headed by four Navy R&D officers. The ONR is located at the Naval Research Center at Dahlgren Naval Station, Virginia. The ONR is the largest and oldest of the six research and development agencies in the Navy. It is headed by four Navy R&D officers. The ONR is located at the Naval Research Center at Dahlgren Naval Station, Virginia.

Objectives:

- To engage universities in research programs of the Navy
- To develop the best talent to the Navy at the graduate level
- To establish continuing relationships between the Navy and the scientific and engineering communities

APPLICATION DEADLINE: February 1, 1979
ANNOUNCEMENT OF AWARDS: March 1, 1979

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Permit No. 43053

U.S. Navy-ASEE Summer Faculty Program
American Society for Engineering Education
Suite 400, One Dupont Circle
Washington, D.C. 20036

NAVY and ASEE

1979 SUMMER FACULTY RESEARCH PROGRAM

Introduction: The Office of Naval Research will sponsor a 1979 Navy-ASEE Summer Faculty Research Program at six research and development installations administered by four Navy R&D organizations in the Washington, DC area: the Naval Research Laboratory (NRL), the David W. Taylor Naval Ship Research and Development Center at Carderock and Annapolis, the Naval Surface Weapons Center at Dahlgren and White Oaks, and the Naval Medical Research Institute.

Objectives:

- To engage university faculty members in the research programs of the various naval laboratories.
- To develop the basis for continuing research of interest to the Navy at the faculty members' institution.
- To establish continuing relations among faculty members and their professional peers in the Navy.
- To enhance the research interests and capabilities of science and engineering faculty members.

Appointments: Although it is anticipated that the research will be unclassified, in order to assure access to areas in which classified research is being conducted, participants must be U.S. citizens either holding or eligible for a Department of Defense Security Clearance of **SECRET**. Two years' experience in teaching or research are required. Sixteen appointments will be made to teaching and/or research faculty of colleges and universities.

Terms: Stipends are \$400 per week for ten weeks. A travel allowance will be paid the appointee for his personal travel for a pre-program visit to the research site and for the summer program.

Duration: Ten weeks from June 11-August 17, 1979. The duration is fixed but the dates may be changed to accommodate appointees.

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Naval Research Laboratory (NRL)

Funded in 1916, the War delayed the opening of the Naval Research Laboratory (NRL) until July 2, 1923. It began operations at its present site at the southern tip of the District of Columbia with a research staff of 24 in two divisions: radio and sound. Today, under the overall direction of the Chief of Naval Research, 3,340 full-time employees of whom 571 hold the Ph.D. degree conduct research and development in 16 research divisions. Fifteen of the divisions and most of the major facilities are located in the main laboratory complex in Washington, D.C. The NRL library contains 140,000 bound volumes, over 500,000 documents in hard copy and microfiche and 2,000 periodicals. Facilities include the most advanced equipment for research in radiation technology, materials, various spectroscopies, optics, plasma physics, acoustics and computer applications.

NRL Current Research Interests

Electronics Technology: Solid state devices, electronic material technology, surface physics, microwave technology, microelectronics, semiconductors, cryogenics and superconductivity and magnetism.

Radar: Radar techniques, search radar, target characteristics and airborne radar.

Optical Sciences: Applied optics, laser physics, optical warfare, optical radiation, optical techniques and optical materials.

Tactical Electronics: Airborne and ships electronic warfare systems, advanced techniques and electronic warfare support measures.

Chemistry: Chemical diagnostics, polymeric materials, inorganic and electro-chemistry, surface chemistry and combustion and fuels.

Material Science and Technology: Advanced materials, alloy transformation and kinetics, metal physics, ceramics, composites, metals performance and thermostructural materials.

Radiation Technology: Radiation effects, cyclotron applications, radiation-matter interactions, materials modification and analysis and X-ray optics.

Plasma Physics: Laser plasma interaction, electron beam applications, plasma dynamics, experimental plasma physics and plasma technology.

Space Science: Advanced space sensing applications, upper air physics, radio astronomy and rocket spectroscopy.

Communication Sciences: Telecommunication systems technology, systems integration and instrumentation, signal exploitation, special communications and information processing systems.

Space Systems: Space technology, aerospace systems, space applications, space environment and systems research.

Acoustics: Applied ocean acoustics, large aperture acoustics, physical acoustics and systems engineering.

Ocean Sciences: Applied oceanography, atmospheric physics, chemical oceanography, physical oceanography and marine biology and biochemistry.

Ocean Technology: Mechanics of materials, ocean instrumentation and applied mechanics.

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Summer Faculty Research Programs — 1979



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most advanced equipment for research in radiation technology, materials, various spectroscopies, optics, plasma physics, acoustics and computer applications.

NRL Current Research Interests: Ocean Waves and Weather, Sound in the Sea, Information Processing, Transmission and Analysis, Radiation Effects and Applications, Electronic and Optical Technologies, Space Satellite Systems, High-Power Technology and Astrophysics, Materials Preparation and Modification, Materials Properties and Analyses, and Stress Effects and High-Performance Materials.

DAVID W. TAYLOR RESEARCH & DEVELOPMENT CENTER

The David W. Taylor Naval Ship Research and Development Center (NSRDC) is the principal Navy research, development, test and evaluation center for naval vehicles and logistics. It also provides RDT&E support to the U.S. Maritime Administration and the maritime industry. NSRDC was established in 1967 with the merger of the David W. Taylor Model Basin at Carderock, Maryland, and the U.S. Navy Marine Engineering Laboratory at Annapolis, Maryland. The center currently has 2,605 employees of whom 1,193 are scientists and engineers. Facilities located at Carderock and Annapolis include deep water model basins, water tunnels, rotating arm basin, anechoic wind tunnel, deep

ocean pressure tanks, CDC 6700, and 6400 computers, hydrofoil test units, materials laboratories, sound and vibration test units, subsonic and transonic wind tunnels and many others.

NSRDC Current Research Interests: Electromagnetic and Acoustic Ship Silencing, Hydrodynamics, Airborne Aerodynamics, Seaworthiness, Structures and Materials, Fire Fighting Systems, Computer Aided Analysis, Design and Manufacturing, Ship Propulsion Systems, Alternate Energy Systems (excludes nuclear), Human Performance in Navy Systems, and Crew Equipment and Life Support.

NAVAL SURFACE WEAPONS CENTER

The Naval Surface Weapons Center (NSWC) of the Naval Material Command was formed in 1974 by the merger of the Naval Ordnance Laboratory and the Naval Weapons Laboratory, each with a distinguished history of R&D related to shore and ship based weapons. The Dahlgren, Virginia, facility of NSWC was formerly the Naval Weapons Laboratory first established at that site in 1918 as the Naval Proving Ground. The White Oak, Maryland, facility of NSWC traces its history to the establishment in 1919 of a mine unit at the Washington Navy Yard, later to evolve into the Naval Ordnance Laboratory. Dahlgren, Virginia, is located about 50 miles south of Washington, D.C., while White Oak is a near suburb of Washington. Of the 5,200 employees of NSWC, 2,200 are scientists and engineers. They carry out their activities

in a wide variety of advanced R&D facilities including the Navy's largest computer complex; chemistry, plastics and metallurgy laboratories; wind tunnels to mach 18; hydroballistic tank; hydroacoustic chambers; laboratories for testing explosives; a chemical/biological defense laboratory complex and many others.

NSWC Current Research Interests: Acoustic Science, Electronic Reconnaissance and Surveillance, Communications, Fire Control Systems, Electronic Warfare, Guns and Ammunition, Mines and Mine Countermeasures, Remotely Piloted Vehicles, Directed Energy Application (Lasers), Navigation, Nuclear Weapon Effects, Aerodynamic and Hydrodynamic Investigation and Test, Remote Sensors, and Electromagnetic Radiation Effects.

NAVAL MEDICAL RESEARCH INSTITUTE

The Naval Medical Research Institute located in the National Naval Medical Center, in Bethesda, Maryland, is a major facility of the Naval Medical Research and Development Command. Its mission is to conduct basic and applied research and development related to maintaining the health, safety and efficiency of Navy personnel. Established in 1942, it now has facilities for research in a wide variety of scientific disciplines pertinent to medical investigation. A list of equipment

includes several unique items, such as a high pressure chamber, a climate-controlled compartment, a fluorescence activated cell sorter, and facilities for sterile procurement of human tissues and organs.

NMRI Current Research Interests: Behavioral Sciences, Biochemistry, Applied Physiology, Hyperbaric Medicine and Physiology, Immunology, Parasitology, Experimental Medicine, Microbiology, and Dental Sciences.

For application forms and information, please contact:
U.S.-ASEE Summer Faculty Program
American Society for Engineering Education
Suite 400, One Dupont Circle
Washington, D.C. 20036

ONLY U.S. CITIZENS ARE ELIGIBLE

APPLICATION DEADLINE: February 1, 1979
ANNOUNCEMENT OF AWARDS: March 1, 1979

American Society for Engineering Education
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NASA and ASEE

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**SUMMER FACULTY
PROGRAMS**

**Please Post on
Faculty Bulletin Boards.**

(202) 293-7080



**American Society
for
Engineering Education suite 400
one dupont circle, washington, d.c. 20036**

December 20, 1978

MEMORANDUM

TO: Dr. Nicholas Perrone, Office of Naval Research
Mr. Ted Huang, Naval Material Command
Dr. David A. Patterson, Naval Research Laboratory
Mr. David B. Colby, Naval Surface Weapons Center
Dr. David Jewell, Naval Ship R&D Center
Cmdr. Richard Morin, Naval Medical Research Institute

FROM: F. X. Bradley, Jr., Navy-ASEE Summer Research Program
Administrator

SUBJECT: Interim Program Progress Report

As reported to you in the enclosed December 20, 1978 memorandum by Marge White, ASEE staff associate, the combined announcement and application form for the summer program has been mailed to 11,000 ASEE members and 33,000 selected members of the American Association for the Advancement of Science. Copies of the flyer have been sent to each of you in the numbers indicated in Mrs. White's memo. Give us a call should you need more.

We also produced a poster that was sent to deans and department heads of scientific and social science disciplines other than engineering as well as to deans of engineering and engineering technology. By this we hope to bring the program to the attention of science and engineering faculty not reached by the direct mailing. Copies are enclosed.

Note that the poster displays in a somewhat uniform format both the Navy and the NASA summer programs. Besides the obvious economy involved in printing and mailing, our primary purpose is to show that the provisions of both programs are closely coordinated and comparable. Thus we hope faculty members will be constrained in making application only by the compatibility of their research interests with those of the research center of the agency of their choice.

Also enclosed are three copies of the December 1978 issue of Engineering Education News. Announcement of the Navy program is displayed on page 5 opposite the announcement of the NASA program. A few copies of the NASA flyer were sent to each of you as noted in the White memo.

Perrone, et al
December 20, 1978
Page 2

Based on prior experience, applications will be received here right up to and, perhaps, a few days beyond the February 1 deadline. I propose a meeting on Tuesday, February 13, 1979 at 10:00 a.m. at the Office of Naval Research, 800 N. Quincy Street, Arlington, VA. The purpose of this meeting will be the preliminary review of applications. It should not take more than two hours. Each Navy co-director would then take applications of interest back to his organization for further consideration. A full set of applications will be provided each of the four Navy co-directors.

At a meeting two weeks later final selections will be made. Alternates will be identified for appointment should a primary selectee decline. Ideally, a potential Navy research colleague should be identified for each applicant by the time an appointment is offered.

Each Navy co-director (Patterson, Colby, Jewell, Morin) is asked to confirm to me that he or an alternate will attend the February 13 meeting. If, in the meantime, I can provide further information, please let me know.

All the best for Christmas and the New Year.

FXB:bw

Enclosure



December 20, 1978

MEMORANDUM

cc: N. Perrone(300 Navy + 10 NASA Flyers)
T. Huang (10 Flyers)
Board of Directors
Projects Board
Summer Faculty Programs Committee

AMERICAN SOCIETY FOR ENGINEERING EDUCATION
1979 NAVY/ASEE Summer Faculty Research Program
Summary of Characteristics of Participants

1. Total number of participants: 16

2. Assignments:

Naval Research Laboratory	6
Naval Ship Research and Development Center:	
Carderock	3
Annapolis	1
Naval Surface Weapons Center: White Oak	3
Naval Medical Research Institute	3

3. Academic Rank

Professor	5
Associate Professor	2
Assistant Professor	8
Instructor	1

4. Highest Degree

Ph.D.	14
M.S.	2

5. Age

Range: 29 - 60
Average: 39
Median: 37

6. Institutional Distribution

No. of Institutions 15

No. of States 11

Other

Puerto Rico	1
District of Columbia	1

7. List of Institutions

Bowling Green University
Catholic University of America
University of Detroit
University of Florida
George Mason University
University of Illinois-Urbana
Le Moyne College
University of Maryland
Michigan State University
University of Missouri-Kansas City
Oklahoma State University
University of Puerto Rico-Mayaguez
University of Texas at Dallas
Virginia Polytechnic Institute and State University
Claremont Graduate School

8. List of States

California
District of Columbia
Florida
Illinois
Kentucky
Maryland
Michigan
Missouri
New York
Puerto Rico
Texas
Virginia

9. Disciplines

Engineering (5)

Aerospace engineering
Bioengineering
Engineering mechanics
Materials engineering
Mechanical engineering

Science (11)

Biology
Chemistry (3)
Geography
Mathematics
Metallurgy
Physics (3)
Statistics

10. Geographical and Institutional Distribution of Applicants

Total States - 39 plus Puerto Rico

Total Institutions - 170

10. Con't.	States (Top 10)	No. of Institutions With Applicants
	New York	18
	Pennsylvania	12
	California	10
	Texas	9
	Maryland	7
	Florida	7
	Michigan	7
	Ohio	6
	Louisiana	6
	Virginia	6
	Institutions (Top 10)	No. of Applicants
	U. S. Naval Academy	5
	Queensborough Community College	5
	Virginia Polytechnic Institute and State University	5
	George Mason University	4
	University of Maryland	3
	Texas A&M University	3
	Louisiana State University	3
	Howard University	3
	University of the District of Columbia	3
	University of Tulsa	3

(36 institutions provided 2 applicants each)

FXB:bw
10/26/79

March 16, 1979

Dear Dr.

I am pleased to confirm your appointment to a 1979 summer faculty research position in the NAVY-ASEE Summer Faculty Research Program. You will be working with Dr. Alan Petty, Code 7930 of the Naval Research Laboratory. His telephone number is 202-767-2003.

Under the terms of the appointment you will receive \$4,000 for ten weeks. You will be paid \$1,500 at the time you arrive, \$1,500 after four weeks, \$800 at the end of the eighth week and \$200 upon completion and submission of a brief report on your research accomplishments during the summer.

The Navy has also provided funds for you to visit the Naval research center at which you will carry out your research sometime before the beginning of your ten-week appointment. This should be arranged between you and the member of the center staff named above, at your mutual convenience.

Your travel to and from Washington for the summer period will also be reimbursed. Enclosed are travel forms you can submit to claim expenses subject to ASEE policy as printed on their reverse side.

You will be responsible for obtaining and paying for whatever housing you may require. We will assist you in every way possible in finding a suitable place to stay during your ten-week sojourn here. If you will notify me of the dates for your pre-program visit and contact me during your stay here, I will provide you with what housing information I may have at that time.

Although June 11 is the announced starting date, we are aware that this may not be compatible with the increasingly varied university calendars. Therefore, if necessary, you may arrange a more convenient starting date. We insist, however, that ten full and uninterrupted weeks be devoted to the summer research.

Dr. David A. Patterson has been designated to administer the summer program for the Naval Research Laboratory. Should you have questions related to your research activities in the center, you should feel free to address them directly to him. He may be contacting you very soon to obtain information needed for whatever security clearance you may need. Because the clearance procedure is time consuming, please respond promptly so that it can be completed prior to the time you arrive for the summer.

To complete our official record, we would appreciate your signing the enclosed acceptance. A copy of my opinion on the tax treatment of the stipend you will receive is also enclosed.

I look forward to meeting you and to helping you enjoy a personally and professionally rewarding experience in the Navy's research program.

Sincerely,

Francis X. Bradley, Jr.
Director
Projects and Federal Relations

FXB:bw

Enclosures

cc: A. Petty
D. A. Patterson
N. Ferrone

The Office of Naval Research

and

The American Society for Engineering Education

Certificate of Recognition

presented to

for successful participation in the

Summer Faculty Research Program

at



Standard Form No. 1035
7 GAO 5000
1035-107

**PUBLIC VOUCHER FOR PURCHASES AND
SERVICES OTHER THAN PERSONAL**

CONTINUATION SHEET

SHEET NO. 1

U.S. DEPARTMENT, BUREAU, OR ESTABLISHMENT						VOUCHER NUMBER	
Office of Naval Research, Department of the Navy						5	
NUMBER AND DATE OF ORDER	DATE OF DELIVERY OR SERVICE	ARTICLES OR SERVICES (Enter description, item number of contract or Federal supply schedule, and other information deemed necessary)	QUAN- TITY	UNIT PRICE		AMOUNT	
				COST	PER		
						\$11,209.74	

NAVY/ASEE SUMMER FACULTY PROGRAM

FINAL FINANCIAL STATEMENT

Period: August 1, 1979 - September 30, 1979

Expense:	This Report (8/1/79-9/30/79)	Prior (9/1/78- 7/31/79)	Total To Date
Salaries	\$1,964.68	\$9,516.30	\$11,480.98
Benefits	325.43	1,612.54	1,937.97
Postal Services	12.53	218.06	230.59
Telephone	5.73	82.46	88.19
Express and Freight	0.93	9.96	10.89
Publications	-----	22.00	22.00
Consultant (Graphics)	-----	54.00	54.00
Publicity	-----	399.50	399.50
Printing	70.00	1,611.65	1,681.65
Typesetting	54.50	151.50	206.00
Offset Printing	-----	19.37	19.37
Graphics	61.10	-----	61.10
Duplicating	4.78	238.25	243.03
Mailing and Distribution	-----	2,785.55	2,785.55
Local Travel	-----	8.50	8.50
Total Administrative Expense	\$2,499.68	\$16,729.64	\$19,229.32
Indirect @ 39.67 of Direct *	987.78	6,640.49	7,628.27
Participant Expense			
Stipends	4,100.00	59,900.00	64,000.00
Travel	3,622.28	5,216.92	8,839.20
Total Participant Expense	7,722.28	65,116.92	72,839.20
Total Program Expense	11,209.74	88,487.05	99,696.79
Less Payments: Vouchers 1, 2, 3 & 4			88,487.05
		Amount Due: Final Voucher(#5)	11,209.74
		Final Total Payments	99,696.79 **

* Provisional Rate

**Contract reimbursement limit: \$99,750.00